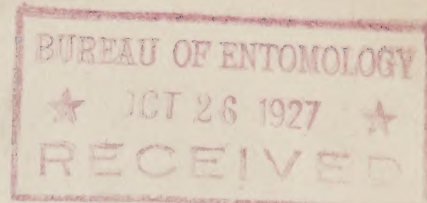


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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Entomology
Washington, D. C.



REPORT OF THE JOINT COMMITTEE ON THE EUROPEAN CORN BORER,*
Appointed by the American Association of Economic Entomologists,
the American Society of Agronomy, and the
American Society of Agricultural Engineers,

The European corn borer was first discovered in the western infestation area of North America in the summer of 1920. Since then it has made a natural spread until at the present time (September, 1927) the insect occurs throughout more than 125,000 square miles of territory in the Great Lakes districts of Ontario, New York, Pennsylvania, Ohio, Michigan, and Indiana. Although drastic measures are being taken to place in operation every practical agency to retard the spread and to reduce the intensity of infestation, the insect is spreading in all directions at an average rate of from 20 to 30 miles per year. In spite of this continued spread, however, the average rate of increase of the intensity of infestation has been reduced, although conditions have been favorable to such increase.

Those familiar with the habits of the corn borer, the crop losses in the principal dent corn growing district of Ontario, and the results of the extensive studies of the borer in Central Europe, are convinced that the insect is of tremendous potentiality and ranks as one of the most alarming crop pests that has ever become established in America. Threatening, as it does, the corn crop of this country, upon which the great livestock industry depends for grain and roughage, the situation presents the possibility of a national calamity which calls for the keenest knowledge of the scientist, the wisest judgment of State and Federal officials and the closest cooperation of the growers.

The committee of entomologists, agronomists, and agricultural engineers cooperating, wishes to indorse and give its hearty approval to the efforts that have been made to control the corn borer and to commend those engaged in directing the research, regulatory, and extension activities designed for its control. Especial commendation is given to the multitude of farmers who cooperated so splendidly in the clean-up campaign.

Before present control measures had been devised, or widely and completely applied, there was a rapid increase in the intensity of infestation. For example, in Essex and Kent Counties, Ontario, the acreage of corn for grain was reduced about 80 per cent between 1924, when infestation had become severe, and 1927, the first year during which vigorous control measures were applied. When the best known control measures have been applied, the rate of increase in the intensity of infestation has been greatly reduced. For example, in Essex and Kent Counties, Ontario, in 1927, after vigorous control measures were enforced, the infestation was reduced fully 50 per cent, although other factors may have helped. Likewise, in the United States the rate of increase in 1927, after the compulsory clean-up, was less than one-fourth that of 1926, before a compulsory clean-up was generally enforced.

* Report presented to and approved by the annual field conference of the International Corn-Borer Organization, Detroit, Mich., September 23, 1927.

The committee reiterates its opinion that it will be impossible to eradicate the borer or even to prevent its spread to corn-growing areas not yet infested. However, it is believed that the compulsory clean-up of 1927 not only greatly reduced the rate of infestation increase, but has been successful in preventing serious commercial losses, and that the expenditure of large funds for this purpose has been completely justified.

It is the desire of this committee to assist in every possible way to marshal all forces in an effort to give every possible support and encouragement to the extensive activities now under way. With this purpose in mind and after careful and complete investigation, the committee suggests and recommends:

(1) That the State and provincial agricultural experiment station, the State departments of agriculture, and all other agencies interested in the welfare of agriculture give their support and encouragement to the Federal Governments of the United States and Canada toward a continuation of present policies in respect to quarantines, quarantine enforcement, and compulsory clean-up activities. Realizing, however, that with the continued spread of the borer, it may be necessary to modify the quarantine and accounting programs within the next few years, scouting work in the area not known to be infested by the European corn borer, but apparently subject to infestations should be continued, and the scouting work should be extended further to uninfested areas in the large corn-producing States, where such areas seem particularly exposed to infestations.

(2) That the cooperative projects in the infested areas now under way between agronomists and entomologists of the State experiment stations and the United States Department of Agriculture to determine the best types, varieties and strains of corn for use under corn borer conditions be continued and expanded. The work in corn breeding has shown that marked variations exist among strains of corn in their susceptibility to corn borer infestation and in their resistance to injury. This field offers promise and is worthy of greater support. Studies to determine the best time to plant different sorts to escape commercial damage should be continued and efforts made to develop strains which may be planted at the optimum time to escape severe infestation and yet yield profitable returns.

(3) That similar investigations with respect to types, time of maturing, yields, etc., be carried on in the corn States not yet infested with the European corn borer.

(4) That there be made, in the area of heavy infestation, an extensive field study, involving a large number of fields, of the relation of time of planting to borer infestation, this to include correlative observations on soil types, varieties, height at the peak of moth flight, and earliness of maturity.

(5) That the possibilities of the future ultimate value of parasites should be kept clearly in mind. To date 12 species have been introduced from Europe of which several have been recovered, indicating their possible establishment under our conditions. Five million of these parasites have been bred and liberated in the infested areas of the United States and Canada. It is recommended that the projects now under way and contemplated to introduce and establish parasites of the corn borer from foreign countries be continued and enlarged as needed. These investigations should include a comprehensive study of the biology, host relationships, etc., of the introduced species in their

native habitats and on this continent after they become adapted to North American conditions. This phase of the project should include biological studies in Europe and America to determine those species best adapted to present and contemplated control recommendations. Projects now under way to determine the biology, host relationships, etc., of native parasites of the corn borer should be continued.

(6) That all of the major ecological phases of the corn borer problem be given special emphasis both at home and abroad.

The reconnaissance ecological survey on which a good start has been made should be extended to embrace the entire Corn Belt and should at least cover the historical and present plant associations.

(7) That since the problem of successfully combatting the corn borer by mechanical processes depends upon a clear understanding and knowledge of the habits, life history, and environmental influences affecting its spread into new territory; as well as upon the limitations of corn as to seasonal, varietal, and cultural practices, more extensive studies of these factors should be made, particularly those which will assist the engineer in making specifications for improvements on present machines, as well as in the design of new and special machines for changing conditions.

(8) That in view of the interdependence of machinery requirements and design, research work be undertaken cooperatively and experimental and research programs be correlated with Federal control methods and large-scale field procedure.

(9) The control of the corn borer by mechanical processes is of demonstrated importance and will undoubtedly continue to be so as long as the pest remains a menace to the corn crop of the country. Inasmuch as this method of control must continue until better methods can be found, we recommend that a comprehensive and vigorous research program relating to mechanical methods of crop production and commercial utilization be initiated by State and Federal agencies.

(10) We recommend particularly investigations with machinery in corn-borer control along cultural, harvesting, and crop utilization lines. The use of rakes, burners, and other stalk and remnant-disposal machinery and devices to supplant hand labor, should receive more attention.

(11) That the experiments to determine the value of plowing under corn debris as a means of destroying the corn borer larvae should be extended. Such studies should include a determination of the comparative value of fall and spring plowing on different types of soil, on different dates and at different depths.

(12) That since the burning of crop residues is one of the means used in the control of the European corn borer, studies on the effect of the burning of corn residues on soil productivity be continued.

(13) That consideration be given to the feasibility of determining on a large scale in screened areas the relative degrees of infestation and damage to be expected (a) where no effort at clean up is made and (b) where the most practical clean-up methods are employed.

(14) That the rural economists be urged to continue their studies of the costs of the various operations involved in the clean-up program and also on changes in farming systems in the areas affected.

(15) That those engaged in research along agronomic and animal nutrition lines study rotations with special reference to determine the degree to which it may be possible or desirable to substitute less susceptible crops for corn in those sections where the corn borer promises to become a serious pest.

(16) That investigations upon chemical insecticides, repellents, and attractants be continued, as well as those relating to the physiology of the corn borer and its chief host plants, especially corn.

(17) That in one-generation areas the study of weeds and other plants than corn be continued to determine what part these may play in the future as breeding hosts of the borer, especially in districts where, owing to the severity of the infestation, corn growing may be abandoned temporarily.

(18) That the State and Federal extension services take every opportunity by demonstrations, exhibits and lectures to acquaint their constituencies with the gravity of the corn-borer problem, the nature of the insect and its work, and the methods of meeting the situation. The need of the cooperation of every grower in the regions adjacent to the infested area as well as within recognized corn-borer territory should be emphasized.

(19) That Federal and State administrative authorities be urged to make available at frequent intervals up-to-date information regarding the general situation and the progress of investigations in the United States, Canada, and abroad, through the medium of bulletins, circulars and leaflets. Also, where advisable, that mimeographed statements of progress be issued at frequent intervals to technical workers.

(20) That the committee act as a clearing house in advancing corn-borer control measures by obtaining opinions from the entomologists, agronomists, agricultural engineers and others, as to the lines of research and other methods which should be pursued, with special reference to needed investigations not now under way and which may have a practical application to the problems.

(21) The committee recognizes that research is the basis of all progress in methods of control of the corn borer and recommends the fullest program of research along all lines offering promise of assistance and the fullest financial support for such research programs.

(22) It is recommended that copies of all written reports or recommendations of the committee be made available to the Secretary of the United States Department of Agriculture and the Canadian Minister of Agriculture.

Respectfully submitted,

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Joint committee of entomologists, agronomists,
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